

Congressman Roscoe G. Bartlett
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[Respect for Life Embryonic Stem Cell Act of 2005]
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The SPEAKER pro tempore. Under the Speaker's announced policy of January 4, 2005, the gentleman from Maryland (Mr. *Bartlett*) is recognized for 60 minutes as the designee of the majority leader.

Mr. BARTLETT of Maryland. Mr. Speaker, we have just heard an impassioned plea to proceed with embryonic stem cell research. Tomorrow we are going to vote on a bill that would expedite embryonic stem cell research. I have here the latest issue of Time magazine. It just arrived in our office, May 23, and the lead article in it says ``Why Bush's Ban Could Be Reversed." It is talking about stem cell research.

In view of the interest all across America and in view of the fact that tomorrow we are going to be voting on a bill, I thought it might be well this evening to spend a few minutes putting this debate in context.

What are stem cells? This is a new term to many Americans. Our first chart is a depiction of the development of early embryos and then all of the tissues in the body which develop from this embryo.

The ultimate stem cell here is the zygote itself. The zygote is produced by the union of the egg from the mother and the sperm from the father. A stem cell is a cell which has the capability of differentiating into a number of other cells. Of course, that is the hope of embryonic stem cell research, that we might induce a cell to develop into a tissue, an organ or cells which will be useful in treating diseases.

This is a very abbreviated depiction of the early development of the embryo because it skips the morula stage, and we will come back to that in a few moments because that is the stage where most of the attention is focused now.

This goes from the zygote through the morula and finally, to the blastula and then to the gastrula. Here we see in the gastrula the development of what we call the germ layers. I guess you would say that a cell from each of these three germ layers, a cell from the endoderm, a cell from the mesoderm or a cell from the ectoderm, are all stem cells because they are destined to become a lot of different tissues and organs in the body.

From the ectoderm develops our nervous system and the skin. From the mesoderm develops most of the mass of the body, all of the bones and all of the muscles, the heart, the red blood cells

and so forth. And then the endoderm, although widely dispersed in the body represents less mass in the body because it is the lining of the lung and the digestive tract. My chart shows the germ cells, the sperm in the male and the egg in the female.

Now there are cells in all of these that one could say were stem cells. Tissue, and blood is a tissue, the tissue which has the most obvious stem cell that students were taught at least 50 years ago when I first was studying these things, is the stem cell in the bone marrow from which a number of different blood cells develop.

When you are working with adult stem cells, if you want something other than the organs from which this cell could differentiate, then you need to de-differentiate the cell. In other words, you need to convince the cell that it is not exactly what it is as a result of the development process, that it returns to its original undifferentiated, or relatively undifferentiated state, and then it can make other tissues.

The embryonic stem cells philosophically certainly hold the most promise because they are cells from which all of the tissues and organs of the body develop. There is the rationale then that these embryonic stem cells hold the promise of producing anything and everything that might be needed for fighting diseases.

[Time: 20:00]

There is enormous theoretical potential from working with stem cells. They are useful in treating diseases that result from tissue or organ deficiencies. We need to differentiate these diseases that result from the action of pathogens. There is a very large list of diseases that theoretically might be treated by stem cell application. Diabetes is one of those. It, by the way, represents the largest cost of all the diseases in this country.

This is probably the one that in my experience is the most heart wrenching because I have seen these little children come to my office. Many times during the day and frequently at night they have to prick their finger, their hand, their ear lobe, something in their body to get a drop of blood, and now we have new instruments that require a pretty small drop of blood, and then this new almost miracle instrumentation analyzes that blood to see what the glucose content is so that they know how to set that pump. Many of them have embedded in their side a little hockey puck size pump that pumps insulin.

This of all the diseases, Mr. Speaker, is the one that perhaps most obviously might lend itself to cure through stem cell research. Giving insulin to a diabetic does not cure the disease. It simply delays the inevitable. The person whether they are young or old will go on to have circulatory problems. They may lose their eyesight. Circulation in their legs may be so bad that their toes become gangrenous and have to be removed. When you see these little children come through your office suffering with this disease, your heart really goes out to them and you want to do everything that you possibly can to make sure that they have every potential for a healthy life. And they will not live so long, they will not live so well as the average person in spite of all the miracles of medicine today because insulin does not cure diabetes.

But if through embryonic or adult, for that matter, if you could do it, stem cell research, if you could develop the islets of Langerhans cells, you could then put them anywhere in the body. In our bodies, they reside in the pancreas. I am not sure why because what they do and what the pancreas does are two very different things. The pancreas secretes a large number of enzymes for digestion in the small intestine and the islets of Langerhans cells just happen to be resident there. They could be anywhere. They could be in your tongue, they could be in your toe, they could be in your ear lobe. They could be anywhere as long as there is a blood supply there to pick up the insulin that is made by these islet cells.

There is a long list of diseases: multiple sclerosis, lateral sclerosis, Lou Gehrig's disease. I have personal familiarity with this because my grandmother died of this a number of years ago, and I remember as a little boy standing by her bedside as she deteriorated and finally the only way that she could communicate with us was by blinking her eyes. She could not move anything else. She had no other way to communicate with us.

There is a hope, realizable, who knows, until we conduct the research and do the medical experimentation, but there is a hope that one might develop from stem cells tissues that could be injected into people with multiple sclerosis or lateral sclerosis. Sclerosis, by the way, means a scarring. What happens is that there is a scarring that inhibits the function of these nerves.

Alzheimer's disease, that is frequently mentioned. That is a particularly tragic disease. Although it was not specifically diagnosed in my mother because she had other ailments that were easier to diagnose, she lived to be 92 and I am sure that she had Alzheimer's because she had many of the symptoms. It was really tragic to watch a woman who was very bright and vital lose her ability to remember, lose a sense of proportion, to be calling, Roscoe, Roscoe. I would say, I'm here. She said, oh, you're not Roscoe because my father was Roscoe, Sr. and she was way back 50 years earlier in her memory. There is a hope that stem cell research could help cure diseases like this.

I have here a very large number of autoimmune diseases. There are 63 of them here. I have mentioned a couple of them. Autoimmune diseases are diseases where the body fails to recognize itself, that is, the parts of the body that have to do with recognizing foreign invaders and assimilating them, ejecting them, killing them.

Very early in our embryonic development, we have a very special kind of life cell which we call T cells. Very early in embryonic development, they are imprinted with who you are. There are 6.5 billion of us in the world and these T cells are smart enough to recognize the difference. There may be somebody out there close to you, but nobody out there quite like you; and you try to take their body organ and put it in you, these T cells are going to recognize it as foreign and move to reject it. Sometimes for reasons we do not understand, these immune reactions in the body get confused, and they attack the body itself.

We have a large number. Lupus was probably the first widely recognized of these diseases. What has happened is that when the body is attacked, the specific tissues of the body are attacked, they degenerate and become not useful. There is some evidence that the body develops an ability to recognize its own; and so the hope is that after this has happened, if you could

replace the damaged tissues, that the person gets returned to normal function. There is enormous potential from use of stem cells, whether they are embryonic or adult, to cure many, many diseases.

The argument today is about whether it should be adult stem cells or whether it should be embryonic stem cells. We have been working with adult stem cells, Mr. Speaker, for over 3 decades, and so there have been a fair number of applications to medicine. You will hear the figure 58. We have been working with embryonic stem cells a little over 6 years. There just has not been time to make those applications, but the fact that there are presently no applications to medicine of embryonic stem cell work does not mean that there will not be and it does not mean that those applications might not be more efficacious than adult stem cell applications.

Indeed, if you will talk to the researchers and the experts in this area, they will all tell you to a man and to a woman that the potential for embryonic stem cell application to medicine should be greater than adult stem cell application just because embryonic stem cells, they are called totipotent, they can produce anything and everything that is in the body. The adult stem cells have already been differentiated, at least to some extent; and so they are limited in their potential application.

There is another very interesting potential that I do not hear often discussed of embryonic stem cells. Fifty years ago when I was studying and teaching in this area, there was an experiment where the researcher went into a mother black mouse and took a little patch of skin in the uterus from one of her little black babies and then he took that little patch of skin, and he went into the uterus of a white mouse with her white babies, and he cut a little patch of skin out of the white mouse and put in that little patch of black skin and when the white mouse was born with that patch of black skin, it did not reject it.

This gives the promise, Mr. Speaker, that there may be less rejection of tissues and organs developed from embryonic stem cells than from adult stem cells. I do not know whether this was a host or donor phenomenon. Both were embryos. All we know is that when the black skin was sewed onto the little embryonic mouse that there was no rejection. If you tried to do that after they were born, I do not know if we have determined at precisely what time they lose that ability, it certainly would have been rejected.

The debate that we are going to vote on tomorrow and the debate which was the subject of the Special Order just before I spoke has to do with whether or not we can effect the needed cures in medicine from adult stem cells or whether we need to move to embryonic stem cells to make this happen. Early in this debate, I had a personal involvement which was kind of an interesting one.

In a former life, I got a doctorate in human physiology. I taught medical school. I did medical research. I went out to NIH in 2001, before the President made his executive order. It was an information meeting at NIH where the scientists working in this field were briefing, they were largely staff members from the Hill. I think I was the only Member there. It occurred to me that you ought to be able to take cells from an early embryo without hurting the embryo, because nature has been doing that forever as far as we know. That is what happens in identical twinning.

I would like to look at the next chart. This is two zygotes. This is not identical twinning. I just wanted to contrast this with identical twinning. This is where we have fraternal twins. They are so-called wombmates. They could be two boys, two girls, one of each. They are conceived at the same time. The mother that ordinarily sloughs one ovum a month this month sloughed two ovums and the sperm, and there are a whole lot of those, millions of them, they found both of them and they fertilized both of them and the uterus was receptive so they both were implanted in the uterus. This simply shows how they present at birth, depending upon how they implanted. If they are implanted far apart, they present one way at birth. If they are implanted very close together, they present another way at birth.

The next chart shows twins from monozygotic twins, that is, from a single zygote, from a single egg. This presentation looks very much like the dizygotic, that is from two eggs, dizygotic twins that implanted in the uterus very close together. Knowing that in identical twinning, regardless at what stage it occurs and it can occur all the way from the two-cell stage clear up to the inner cell mass and there are several stages between these two, but no matter where it occurs, the embryo has lost half of its cells and both parts go on to produce a perfectly healthy baby.

So I reasoned that it should be possible to take cells from an early embryo without hurting the early embryo and I asked the researchers at NIH, was that possible. They said, yes, of course that is possible. But with all the embryos out there that could be simply destroyed to get the stem cells, nobody had determined how easy this was to do. But they said that it certainly was doable.

A little bit later, and this was again before the President gave his executive order, I met the President at an event and I told him very briefly that I had met with NIH, and there was this possibility that we could take cells from an early embryo without harming the embryo. He asked Karl Rove to follow up on that. Several days later, Karl Rove called me, Mr. Speaker, and he said, **ROSCOE**, I went to NIH and I told them what you told the President, and they told me they cannot do that.

I said, Karl, there is some problem here. Either they misunderstood your question or something because these are the same people that go into a single cell and take out the nucleus and put another nucleus in the cell. Of course they can go into a relatively large embryo and take out a cell or two. He went back to talk with them again and called me back and said, they are telling me the same thing. And so the President came out with his executive order which said that Federal funds could be used in research only on the cell lines that had been developed from embryos that had been killed in the process of developing them, that no new cell lines could begin with embryos that had to be killed.

[Time: 20:15]

This is only with Federal money, of course. The private sector can do whatever it wishes because there is no law prohibiting the use of embryos. My concern, Mr. Speaker, is that we in Congress ought to be a player in this, and now we are standing on the sidelines.

Mr. Speaker, I see that the gentleman from Georgia (Mr. *Gingrey*) has joined us, and I yield to the gentleman.

Mr. GINGREY. Mr. Speaker, I thank the gentleman from Maryland for yielding to me. And I think particularly at this point I wanted to interject some thoughts.

First of all, the gentleman from Maryland (Mr. *Bartlett*), as he pointed out just a second ago, is a Ph.D. physiologist who taught years ago in medical school and taught physiology but, more importantly, has also taught the subject matter, which is difficult to understand. I know. I was there in medical school. And that is the subject of embryology. Embryology. Medical students get maybe in a 4-year period of time, 6 months' worth of embryology; and of course, to hear my colleague from Maryland explaining the embryologic process, it sort of takes me back to those days.

But I realize, of course, how difficult it is to understand for Members of the body. There are 435 of us, of course, and just a handful have ever taken any embryology. There are no embryologists other than maybe the gentleman from Maryland (Mr. *Bartlett*) in the body; so it is not an easy concept to understand.

But what I hear my colleague tell us, Mr. Speaker, is that it is possible to get stem cells from an embryo without destroying the embryo. Is it being done today? No, it is not being done today because, quite honestly, it is easier to scramble an egg than to do one over easy.

It is a little more difficult. It will take some study. And we are not talking about long, many years, science fiction at all; and the gentleman from Maryland explained it very clearly. We are close. We need a little research, nonhuman primate research, but we are a lot closer to this possibility than a lot of our colleagues and the general public understand.

Mr. Speaker, I want to share with my colleagues, as an OB/GYN physician, there is a procedure that probably has been done for at least 10, 12, maybe 14 years now. There is an acronym; everything has an acronym. It is called ICSI, intracytoplasmic sperm injection.

What do I mean by that? An infertile couple where the problem is male infertility and a low sperm count. A normal sperm count is 60 million. That is a lot. When we get below 1,000, it is very difficult and the chances of a natural conception are markedly diminished at that point.

But with this ICSI technique, they literally can obtain sperm by a biopsy in someone who has just a few sperm, not 1,000, not 60 million, but maybe just a few; and take one sperm from that biopsy and under the proper laboratory techniques, maybe a specialized microscope, take the wife's egg and inject that sperm with a needle, with a very fine needle, under the microscope. Intracytoplasmic sperm injection, and all of a sudden an embryo is created. Life is created. A child is created. And after several days in cell multiplication, as the gentleman from Maryland (Mr. *Bartlett*) was explaining, then that is implanted in the mom's uterus, and the miracle of birth can occur for that couple.

We are not talking about a procedure, ICSI, that is being done exclusively at the National Institutes of Health. This is being done right in my community of Marietta, Georgia, by reproductive endocrinologists, those doctors who specialize in infertility and doing those kinds of things; and it has been going on for 10, 12 years now.

So this is an opportunity to come and share this time with my colleague and say that this is not Star Wars. For goodness sake, we put a man on the moon in 1969. There is a way to do this. That is to obtain embryonic stem cells without destroying or indeed even harming the embryo, and that analogy, that explanation of twinning and how the mono-zygotic single egg identical twin that the egg divides at a certain stage; and indeed, they are taking away 50 percent of the cells, and in most instances, if the division is complete, they have two perfectly identical, beautiful children that develop. I know. I have got two precious identical twin granddaughters now who are 7 years old, Mr. Speaker. They were born at 26 weeks, right at that point where it is perfectly legal with very little prescription in our respective States to destroy those lives.

So this is a hugely important thing to me, and I thank my colleague for pointing out the fact that we are not that far away. With a little study, a little funding to be able to develop this technique of obtaining these stem cells, these totipotent cells, as he described, without scrambling the egg and doing it the easy way, the simple way, killing the embryo, which is destruction of life. It is not necessary.

And we are going to be talking, Mr. Speaker, tomorrow in this Chamber about the great successes that we are achieving today with stem cell technology, but not embryonic stem cells. The results there have been pretty dismal. We are talking about the great success, 58 different research endeavors where progress has been made in these various diseases that the gentleman from Maryland (Mr. *Bartlett*) described, utilizing either stem cells obtained from umbilical cord blood or from adult stem cells, bone marrow and other tissues.

So this is why it is so important for our colleagues to hear from the gentleman from Maryland (Mr. *Bartlett*) and to think about this, to understand exactly what he is saying, because I think it is really on point and very timely.

Mr. BARTLETT of Maryland. Mr. Speaker, I appreciate my colleague's coming and entering into this discussion.

Before leaving this little experience with NIH, I will, Mr. Speaker, submit for the **RECORD** a letter which I received today from Dr. Battey, who is the spokesman for embryonic stem cell at NIH, and what the letter says is, and I will come back to it in a few moments to read a couple parts from it, that what we are proposing to do is certainly possible; that there is no medical or scientific impediment to doing this. I just wanted to put to bed the suggestion that NIH says what we are doing cannot be done in spite of the fact that that is what Karl Rove thought they said.

In my office just a few months ago, NIH kind of sheepishly admitted that there was some misunderstanding in conversation because they had never said that we could not go into an early embryo and take a cell. What they had said, which is true, which is why I am proposing this research, was that we have never developed a stem cell line from that early an embryo.

Ordinarily, we develop a stem cell line from the inner mass cell stage of the embryo. But the earlier we get the stem cell, the more totipotent it ought to be and the more efficacious it ought to be in treating the diseases.

I have here, Mr. Speaker, a little diagram which shows the ontogeny, the development of the embryo. It begins, of course, with the egg that comes from the mother, the oocyte, and then the sperm, and it shows only four or five there. There will be millions there, I assure my colleagues. And there is really a miracle that occurs here because as soon as one of them penetrates that egg, there is a big barrier put up so that there is no other candidate. It would be quite disastrous if two of them penetrated that egg because that would create an embryo which would certainly die.

And then the egg, called a zygote, goes on to develop, and it is two cells. And it may split here to make two babies, by the way, identical twins. And then the four-cell and then the eight-cell stage. It is at the eight-cell stage, and I am jumping a little ahead here, it is at the eight-cell stage in a petri dish.

This is what happens in the body. If this kind of thing happens, they can fertilize it in a petri dish. It is at this eight-cell stage in more than 1,000 times now in clinics--it started in England; it is now in this country--they have gone into the eight-cell stage and taken out one cell. They might get two. And they then do a Preimplantation Genetic Diagnosis [PGD] on that embryo. In other words, they determine whether or not there are any genetic defects like Down's disease, for instance, in which case they would not want to implant that embryo. They do this for the benefit of their baby because one would not want, if they had a choice, to bring a child into the world that was going to have a less than optimum quality of life because they had a genetic defect.

This is not genetic engineering. Genetic engineering is when they change the genetics. All they are doing here is seeing what genetics are there, and if there is no deficiency in the genetics, they implant the six or seven cells that remain, and more than 1,000 times they have had a normal baby.

All of this happened in the intervening years between 2001 and now. This may have been going on when I talked to the President and when I talked to NIH. I did not know that it was going on, but just a few months ago, this report came out, and now I spent the other day, for a half-hour, probably, talking with two investigators here in Virginia who are doing this.

I just want to spend a couple of moments talking about the debate. The debate is between the use of discarded embryos that the proponents, and that is what the bill is tomorrow, say are going to be thrown away anyhow and why do we not get some good from them by developing stem cell lines from them since they are going to be discarded anyhow?

The argument on the other side is twofold. First of all, it is not certain they are going to be discarded because they can be adopted. What is it? Operation Snowflake where parents can adopt one of these embryos and have them implanted in a mother other than the one from whom the ovum was taken. So it is not certain that they are going to be discarded.

The other challenge to this is that this is a life. In the proper environment, this is a human being. It is an embryo. Put it in the mother's womb, and it will become a very distinct human being, unlike any other out of the 6.5 billion people in the world. And there are those who feel that it is immoral. The President is among them, and he has said this, that it is immoral to take one life so that we might help another.

The good news is, as the gentleman from Georgia (Mr. *Gingrey*) said, we do not have to do that because we can take cells from an early embryo without hurting the embryo.

By the way, umbilical cord blood stem cells are not an alternative to embryonic stem cells. Just a little quote here. This is from a scientist at the Johns Hopkins University School of Medicine, one of the best medical schools in the world: ``As a physician-scientist who has done research involving umbilical cord blood stem cells for over 20 years, I am frequently surprised by the thought from nonscientists that cord blood stem cells may provide an alternative to embryonic stem cells for research. This is simply wrong," he says.

Do they have a place in treating? Yes, they do. But they are not a substitute for embryonic stem cells, and he makes that very plain.

Opponents of embryonic stem cell research suggested that 58 diseases have been successfully treated using adult stem cells. That is true.

I asked NIH, is that true that we had 58 treatments from adult stem cells and none from embryonic stem cells?

[Time: 20:30]

They said yes, that is true. I said, why is that true? That is true because we have had more than 3 decades' experience with adult stem cells, and just a little over 6 years' experience with embryonic stem cells. There simply has not been time. All of the 58 listed, all of them, are represented by organizations that support stem cell research. So what this says is that all of those physicians that are involved with these 58 applications of adult stem cells, all of them support stem cell research.

The argument on the other side is that it is immoral, that we should not take one life to support another life; and in making those claims, they state the following: this kills human embryos. It does. You may not think that is a problem. You may not see this little bit of life that holds the miracle of chromosomes and against that will develop the whole unique individual, not like any other. Out of 6.5 billion in the world, you may not see that as human life, but it clearly is. It kills a human embryo. You may be okay with that, you may not be, but a great number of people are not okay with that.

They argue that H.R. 810, which is the bill we will be voting on tomorrow, is an empty promise because the embryonic stem cells have not treated a single human disease, and that is true. We just gave the reason for it: they have not been worked with long enough to know whether they can treat a disease or not.

H.R. 810 does not have 400,000 discarded embryos to use, that is true; and the statement is made that if you used these 400,000 embryos, you would only get 275 stem cell lines, and that is because only 2.8 percent of them have been donated for research. That gets you down to 11,000, not 400,000. Only 65 percent of those will survive the thawing. They are frozen. This is not an event that is not traumatic. It is very traumatic to the embryos. A third of them do not survive the freezing and rethawing.

Twenty-five percent of those that are still alive after they thaw, only 25 percent will go on through this development stage, through the blastula, gastrula and so forth, so they can be implanted. Then, even if it has gone that far, in one trial only one out of 18 attempts produced a stem cell line, and in another trial only three out of 40 produced a stem cell line. So that now gets you down to about 275.

Yes, we have not developed perfection yet in these techniques; but 275 stem cell lines is more than 10 times more than all the stem cell lines we have now, which, by the way, I think are almost all in this country contaminated with mouse feeder cells.

I see that we have been joined by my colleague from Nebraska. I would be happy to yield to the gentleman from Nebraska (Mr. *Osborne*) for his comments.

Mr. OSBORNE. Mr. Speaker, I thank the gentleman very much and applaud him for his effort. I have been able to listen to most of what was said tonight. Obviously, the gentleman has a tremendous depth of scientific understanding. I do not have that depth, but I would just like to reflect on the dilemma that many Members will be placed in tomorrow as we decide on this particular vote.

As the gentleman has mentioned, those who are in favor of embryonic stem cell research, many of them are people who have children who have juvenile diabetes. There are many who have parents or others with Parkinson's or Alzheimer's and Lou Gehrig's disease and so on. We have heard from these people personally, and our hearts go out to them. We have heard that 400,000 embryos are going to be discarded anyway, and on and on and on.

Yet, on the other side of the argument, as the gentleman has amplified so well, there are some other dilemmas. One thing that is of concern to me is when is a life a life? Obviously, we would not take a 2-year-old and do any harm to that child; we would not experiment on that child. We would not do it to a 1-year-old. Probably, in many cases, most of us would say an 8-month-old fetus would not be appropriate to do some harm to. But where is it that you draw the line? Is it at 6 months? Is it at 4 months? Is it at 1 month? Is it at 1 week?

So therein lies the horns of the dilemma. So many of us are of the persuasion that you really cannot draw that line. When a life is a life is at conception, and therefore you have to respect life. There is a certain sanctity of life.

So, again, the arguments will range wide and far tomorrow. Some will say that embryos can be adopted, and they can. So whether we have 400,000 or 20,000, maybe 1,000, maybe 10,000, maybe 15,000, maybe more than that will be adopted out.

Many will argue that adult stem cells are more productive in research. As the gentleman has pointed out so effectively here, some of that has to do with the length of time of research. There is no question. But there is no question that adequate resources and adult stem cell research will produce results.

There is also the question about private funding. There is no restriction on private funding on embryonic stem cell research. If it is so promising, then why has the private sector not stepped up, because obviously there are huge profits to be made if you have some type of a cure for juvenile diabetes or Alzheimer's or whatever; and yet we do not seem to see that afoot.

Then I guess the last thing that I would mention is that there is the ethical question, should we use public funds in doing research that is so divisive, that has so many people on both sides of the fence? It seems we should have more unanimity in using public funds to do this type of research.

So I applaud the gentleman for the proposed legislation that he has before us, because in this legislation is the prospect of using embryonic stem cells without destroying the embryo. Of course, that removes the dilemma on both sides. So we think that the legislation, even though it is in its early stages, certainly has great promise and is one that we ought to pay very close heed to and one that would certainly be much more appealing to me than the other alternatives at the present time.

Mr. Speaker, I just wanted to come down briefly and let the gentleman from Maryland (Mr. *Bartlett*) know I appreciate his efforts. I have read the White House white paper. I understand most of what is in there.

One other thing that is also mentioned is the fact that when these frozen embryos are thawed out, many of them die, as the gentleman mentioned; and some of those apparently will yield stem cells in the early stages.

Anyway, Mr. Speaker, I thank the gentleman again for this legislation.

Mr. BARTLETT of Maryland. Mr. Speaker, reclaiming my time, I thank the gentleman very much.

Mr. Speaker, let me yield to the gentleman from Georgia (Mr. *Gingrey*).

Mr. GINGREY. Mr. Speaker, I thank the gentleman for yielding, and I thank my friend, the gentleman from Nebraska (Mr. *Osborne*), for being here with us tonight and for his very, very pertinent remarks in regard to where do you draw the line as far as life I have heard people on the other side of this argument say, well, we are talking about getting these stem cells, and they are not really embryos, they are pre-embryos.

Maybe our Ph.D. physiologist knows about the definition of pre-embryo, but I never learned that in embryology or any medical school course I took or in my obstetric and gynecology training and my 30 years of experience in the field. An embryo is an embryo. An embryo begins

at the moment of conception when that sperm and egg come together. That is the embryonic stage.

Really, an embryo, that stage lasts until the birth of the child. Now, you can differentiate and say at 8 weeks or 10 weeks we start calling it a fetus, but there is no, to my knowledge, definition of a pre-embryo.

I wanted to just kind of follow on the gentleman from Nebraska's remarks. We are hearing a lot now about we have to catch up, Mr. Speaker, that we are behind. The South Koreans have come up with therapeutic cloning and they have cloned an embryo and they are going to get embryonic stem cells from a cloned embryo, and we are getting further and further behind.

The thing that the American public maybe does not understand is that when they are asked the question, are you for embryonic stem cell research that can cure some of these dreaded diseases, my colleagues have talked about, naturally the response is going to be, oh, yes.

And use Federal funding for that? Sure. We are going to cure juvenile type I diabetes, and Christopher Reeves, God rest his soul, we are going to restore the function of his limbs, and we are going to cure Alzheimer's.

But I think so many people, Mr. Speaker, and even some of our colleagues, need to understand that in getting those embryonic stem cells, the life is destroyed. And when you ask that question, well, wait a minute now, if you are talking about sacrificing one life to get these cells in hopes that they might lead to at some point in the future a cure, no, I am not for that.

So I think we need to be very clear by it, Mr. Speaker. We need to make sure that people understand that the harvesting today and the way it is done and the way it is proposed and the way we are hearing from the Castle-DeGette bill we are going to discuss tomorrow is using Federal dollars, taxpayer dollars, where people had no choice, they had to pay their taxes, we are going to use those dollars to fund research that involves the destruction of human life, a little, tiny infant, who with a little bit of luck and ingenuity could grow up and be a Member of this body some day. We were all, were we not, embryos at one time. Of course we were.

And when you get this and you start down this slippery slope in regard to what the South Koreans are doing, suppose, Mr. Speaker, that the harvesting of these stem cells from these cloned embryos that the results are not very good, as they have not really been very good in the embryonic stem cells we have retained from these so-called throw-away babies, these 400,000 in these fertility clinics. The results have not been that good. That is why the gentleman from Nebraska said that most of the private funding is going toward adult stem cells.

But what I am saying, and I will wrap this up pretty quickly because I know the gentleman's time is running short, in these cloned embryos, if it is not working too well with the fetal cells, the embryonic cells, why not let these babies develop, maybe to the point 26 weeks, the stage at which my precious twin granddaughters were born, and then you have got an organ that you can transplant, a liver, a pancreas, and you can then just simply destroy the child at that point and take their organs?

This is a slippery slope upon which we are about to start if we do not defeat this bill tomorrow, and the gentleman from Maryland (Mr. *Bartlett*) has an alternative to this, and it is something that I think is timely and it is good and I commend him for his efforts.

Mr. BARTLETT of Maryland. Mr. Speaker, reclaiming my time, I thank the gentleman.

I have here a very recent report, ``Alternative Sources of Human Pluripotent Stem Cells," a white paper by the President's Council on Bioethics, and the next chart shows page 25 from this.

The highlighted part says: ``It may be some time before stem cells can be reliably derived from single cells," the process we have been talking about, ``extracted from early embryos and in ways that do no harm to the embryo...but the initial success of the Verlinsky Group's efforts at least reaches the possibility that embryonic stem cells could be derived from single blastomeres removed from early human embryos without apparently harming them."

Then there is an asterisk, and if you go to the bottom of the page it says: ``A similar idea was proposed by Representative *Roscoe Bartlett* of Maryland as far back as 2001 before the President gave his executive order."

There are four potential sources listed here. This source is number two. They do a very good job of discussing this in the body of the text. They talk about parents going for Preimplantation Genetic Diagnosis [PGD]. They talk about the possibility that you could develop from the cell or cells taken a repair kit.

[Time: 20:45]

This is a fascinating potential. This is why we are collecting and freezing umbilical cord blood, because we hope that through the life of that person, there might be some opportunity to use stem cells. They are not embryonic, they have limited application, but maybe, just maybe, we could produce something that would help that person later on with a disease.

But in this case, if they did Preimplantation Genetic Diagnosis [PGD] and if they developed a repair kit from that, then all that we would ask for is that a few surplus cells from the repair kit could be made available for a new stem cell line.

But that is not even what our research, our paper, our bill [Respect for Life Embryonic Stem Cell Research Act of 2005] asks for. What our bill asks for is simply Federal money to do research on animals, on nonhuman primates, that is, the great apes, which genetically are remarkably similar to humans, if it works there, it probably would work in humans, to determine the efficacy and the safeness of doing this.

Unfortunately, if all that you read was their recommendations, you would be disappointed, because they never therein mention that the parents have made an ethical decision to make sure they do not have a baby with a genetic defect, the parents who made a decision to establish a repair kit so that their baby at any time during their life could have available compatible tissue to

fix a medical problem. They simply state in their recommendation section that they consider it unethical to go to an embryo and take a cell out of it just to establish a stem cell line.

It must be that a different person wrote the recommendations at the end as compared to the person or persons that wrote the text in the front, because they certainly should have mentioned the parents' decision to develop a repair kit, the parents' decision to make sure that their baby did not have a defect. These are decisions that parents make, I think, ethically to the benefit of their baby and for all that we would hope in the future. And, again, our bill deals only with animal experimentation to determine the efficacy and the reliability of doing this.

The next chart shows another development chart, and I would just like to reemphasize: Now, imagine this is not in the mother; this is an infant dibulum, in the ovary and the fallopian tube here. Imagine that this is in a petri dish and not in the mother, and we fertilized the egg, and it has now developed to the eight-cell stage, and we can take a cell from that stage and do a Preimplantation Genetic Diagnosis [PGD]. Maybe, as the authors of the white paper said, you could develop a stem cell line from that. We do not know. They simply have not tried. It has been too easy to take and kill embryos to get stem cell lines from them.

There is one other ethical argument that maybe is a problem, Mr. Speaker. They address this in the President's white paper. They do not think it is a problem. When you read that white paper you will see that they are bending over backwards to satisfy all of the concerns that even the most concerned pro-life person could have. They do not believe that you could develop an embryo from a single cell.

But if we waited a little later, and I have asked the researchers, the medical people who are doing this Preimplantation Genetic Diagnosis [PGD], if they could wait until the inner cell mass stage, if they could wait until the inner cell mass stage to take the cell. Now we avoid even that potential ethical argument, because we already have a differentiation that has occurred. There are now two kinds of cells in what we call the embryo. There is the inner cell mass, which will become the baby; and then there is the rest of the trophoblast which will become the decidua. The decidua is the amnion and chorion.

Now, you cannot have a baby without amnion and chorion; it cannot grow. So if you take cells only from the inner cell mass, they could never become an embryo because these cells have lost all of their ability to produce the decidua, but they retain all of the ability to produce the cells of the body, the great variety of cells in the body.

I am pro-life. I have an impeccable, 100 percent pro-life voting record. I would not be here on the floor today talking about a possible solution to this debate if I did not think that this was perfectly ethical and probably perfectly doable.

I hope, Mr. Speaker, that a number of my colleagues will sign on to our bill. We are going to hold this until about noon tomorrow, because we would like to get as many pro-life signers as possible.

If the other bill reaches the President's desk, no matter what he decides, some people are not going to be happy. If he vetoes the bill, as he has said he would, then all of those Americans, and I believe it is a majority, as there will be a majority tomorrow that vote for H.R. 810, will wonder why it is not okay to take these embryos that hardly look like a baby, just eight cells, to take these embryos, and they are going to be discarded anyhow. And given the two arguments, they may not be discarded, they may be adopted, and at the end of the day, you are taking a life.

If you think it is okay to take one life to help another, that is okay, but a lot of people do not think that is okay. On the other hand, if he lets it become law, then he is going to offend all of those pro-life people who really see this as life.

What I hope, Mr. Speaker, is that my bill can be on the President's desk when he is faced with the unhappy choice that he will have with this bill, so that he can now say, Gee, I have a bill which supports what I want, and that is embryonic stem cell research without harming an embryo.

We are not ready yet to work with humans. This bill addresses only animal experimentation. But as we saw earlier, Mr. Speaker, from this chart that we had from that page of the white paper, let me put that back up because I think it makes the point--it may be some time. That is why we have researchers and that is why we have money from NIH, because it may be some time before stem cell lines can be reliably derived from single cells. They believe that it is possible to do that. It may take some time, taken from early embryos in ways that do not harm the embryo. As we have pointed out, they will be taken to benefit the embryo, to do Preimplantation Genetic Diagnosis [PGD] and to develop a repair kit for the embryo.

But the initial success of the Verlinsky group's efforts at least raises the future possibility that pluripotent stem cells could be derived from single blastomeres removed from early human embryos without apparently harming them. Indeed, if it is taken for Preimplantation Genetic Diagnosis [PGD] and to establish a repair kit, not only are they not harmed, they are benefited by it.

Mr. Speaker, I know that all America will be watching this debate; they just voted \$3 billion in California to pursue this. I believe we can pursue all of the potential miracles that could come from embryonic stem cell research and applications to medicine without harming embryos, and I urge an early vote and adoption of this bill.

Mr. Speaker, I submit the following for the **RECORD**:

DEPARTMENT OF HEALTH

AND HUMAN SERVICES,

Washington, DC, May 23, 2005.
Hon. **ROSCOE G. BARTLETT**,
Rayburn House Office Building,
Washington, DC.

DEAR MR. BARTLETT: I am pleased that Drs. Allen Spiegel and Story Landis were able to meet with you, Mr. Otis and Mr. Aitken during your visit to the National Institutes of Health (NIH) last month to discuss ways to derive human embryonic stem cells (hESCs). Drs. Spiegel and Landis were serving as Acting Co-Chairs of the NIH Stem Cell Task Force during my leave of absence from this position. Earlier this month, I returned to chair the Task Force. NIH shares your enthusiasm on the therapeutic potentials of hESC research and thank you for your continued support of this field.

Drs. Spiegel and Landis briefed me about your April 26th meeting. I am also aware that you have had previous meetings with NIH officials, including myself, Lana Skirboll and Richard Tasca, on this topic. You propose the possibility of using a cell (or two) removed from the 8-cell stage human embryo undergoing Preimplantation Genetic Diagnosis (PGD) to: 1) create a ``personal repair kit" made up of cells removed from the embryo and stored for future use; and 2) for deriving human embryonic stem cell lines.

You suggested that creating hESC lines in this manner would avoid ethical questions surrounding the fate of a human embryo. Live births resulting from embryos which undergo PGD and are subsequently implanted seem to suggest that this procedure does not harm the embryo, however, there are some reports that a percentage of embryos do not survive this procedure. In addition, long-term studies would be needed to determine whether this procedure produces subtle or later-developing injury to children born following PGD. Also, it is not known if the single cell removed from the 8-cell stage human embryo has the capacity to become an embryo if cultured in the appropriate environment.

NIH is not aware of any published scientific data that has confirmed the establishment of hESC lines from a single cell removed from an 8-cell stage embryo. We are aware of the published research of Dr. Yury Verlinsky in the Reproductive Genetics Institute in Chicago that showed that a hESC line can be derived by culturing a human morula-staged embryo (Reproductive BioMedicine Online, 2004 Vo. 9, No.6, 623-629, Verlinsky, Strelchenko, et al). It is also worth noting, however, that in these experiments, the entire morula was plated and used to derive the hESC lines. The human morula is generally composed of 10-30 cells and is the stage that immediately precedes the formation of the blastocyst.

At the April 26th meeting, NIH agreed that such experiments might be pursued in animals, including non-human primates. That is, animal experiments could be conducted to determine whether it is possible to derive hESCs from a single cell of the 8-cell or morula stage embryo. To date, to the best of our knowledge no such derivations have been successful. NIH also does not know whether these experiments have been tried and failed in animals and/or humans and, therefore, have not been reported in the literature. NIH agreed to explore whether there have been any attempts to use single cells from the 8-cell or morula stage of an animal embryo to start embryonic stem cell lines by consulting with scientists that are currently conducting embryo research. From these discussions, these scientists believe it is worth attempting experiments using a single cell from an early stage embryo or cells from a morula of a non-human primate to establish an embryonic stem cell line.

Of note, a recent 2003 paper from Canada shows that when single human blastomeres are cultured from early cleavage stage embryos, before the morula stage, that there is an increased incidence of chromosomal abnormalities. Even with hESCs derived from the inner cell mass of the human blastocyst, the odds of starting a hESC line from a single cell are long, perhaps one in 20 tries. Thus, the odds of being able to start with a single cell from an 8-celled or morula staged embryo are equally challenging. This would make it difficult to accomplish the goal of establishing "repair kits" and hESC lines from any single PGD embryo. (Fertil Steril, 2003 June, 79(6): 1304-11, Bielanska, et al). It is possible, however, that improvements in technologies for deriving and culturing hESCs may improve these odds.

NIH concludes that the possibility of establishing a stem cell line from an 8-cell or morula stage embryo can only be determined with additional research. NIH would welcome receiving an investigator-initiated grant application on this topic using animal embryos. The Human Embryo Research Ban would preclude the use of funds appropriated under the Labor/HHS Appropriations Act for pursuing this research with human embryos. As with all grant applications, the proposal must be deemed meritorious for funding by peer review and then will be awarded research funds if sufficient funds are available. It also bears keeping in mind that it may take years to determine the answer.

At the April 26th meeting, you had mentioned that twins can develop when the inner cell mass splits in the blastocyst and forms two embryos enclosed in a common trophoblast. You asked if cells from the inner cell mass could be safely removed without harming the embryo. In animal studies, it has been shown that the blastocyst can be pierced to remove cells of the inner cell mass and the embryo appears to retain its original form but it is not known whether the embryo will result the birth of a healthy baby. Since this experiment in human embryos at either the morula or the blastocyst stage would require evaluations of not only normal birth but also unknown longterm risks to the person even into adulthood, it would have to be considered a very high risk and ethically questionable endeavor. Because of the risk of harm, this research would also be ineligible for federal funding.

You had also asked NIH about the latest stage in development that an embryo can be artificially implanted into the womb. We know that infertility clinics transfer embryos at the blastocyst stage (approximately Day 5 in human embryo development) as well as at earlier stages.

Finally, I am providing an additional resource that was discussed at the April meeting. I have enclosed a copy of a recently released white paper developed by the President's Council on Bioethics (PCB) on Alternative Sources of Human Pluripotent Stem Cells. In this white paper, the PCB raised many ethical, scientific and practical concerns about alternate sources for deriving human pluripotent stem cells without harming the embryo. Your proposal is specifically discussed in this report.

I hope this information is helpful.

Sincerely,

James F. Battey, Jr.,
Chairman, NIH Stem Cell Task Force.

Enclosure.